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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,108	12/03/2003	Siaw Kiang Chou	040184.000200US	7629
20350 7590 07/02/2007 TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			EXAMINER FICK, ANTHONY D	
			ART UNIT 1753	PAPER NUMBER
			MAIL DATE 07/02/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/728,108

**Applicant(s)**

CHOU ET AL.

**Examiner**

Anthony Fick

**Art Unit**

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 3/31/04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Zuppero et al. (U.S. 5,593,509).

Zuppero discloses a micro thermo-photovoltaic generator as shown in figure 3.

Regarding claim 1, figure 3 shows the generator comprising a combustion chamber, 210, generating an even temperature distribution on an outer wall, 220, an emitter engaged in thermal connection to the chamber, 230, and a photovoltaic cell in proximity to the emitter, 240, configured to generate an electric current.

Regarding claim 12, Zuppero discloses the burner size, and thus the chamber diameter (see figure 3), to be less than 3 mm (column 9, lines 1-6). Zuppero also discloses propane as a possible fuel source (column 6, lines 58-60).

3. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Kovacik et al. (U.S.P.G.Pub 2006/0107995).

Kovacik discloses a thermophotovoltaic generator as shown in figure 3.

Regarding claim 1, figure 3 shows the generator comprising a combustion chamber, 24 and 26, an emitter engaged around the chamber, 28, and a photovoltaic cell in proximity to the emitter, 14, configured to generate an electric current.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 through 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacik as applied to claim 1 above, and further in view of Gardner et al. (U.S. 6,786,716).

The disclosure of Kovacik is as stated above for claim 1.

Regarding claims 3 and 4, figure 3 shows a cylindrical outer wall for the combustion chamber and a backwards facing step.

Regarding claims 5 through 7, Kovacik discloses the emitter is matched to the characteristics of the solar cell (paragraphs 0027-0030), discloses use of SiC as a possible emitter (paragraph 0027) and discloses emitters made of magnesia oxide (MgO) doped with a d-series transition element (paragraph 0029). Cobalt and Nickel are d-series transition elements and thus the emitter of claim 6 is disclosed by Kovacik.

Regarding claim 8, Kovacik discloses the use of a filter, 16, between the emitter and the solar cell (paragraph 0031).

Regarding claim 9, Kovacik discloses the use of glass and dielectric filters, including multiple layers of dielectric materials (paragraphs 0033 and 0035).

Regarding claim 10, Kovacik discloses GaSb photovoltaic cells (paragraph 0029).

Regarding claims 11 and 12, Kovacik discloses burner design dependent on the type of fuel utilized.

The differences between Kovacik and the claims include the use of a platinum catalyst and the size of the device.

Gardner teaches a microcombustor as shown in figure 1 that utilizes platinum catalyst on the inside walls of the combustion chamber (column 7, lines 49-51). Gardner also teaches the microcombustor can have sizes less than a millimeter (column 5, paragraph 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the combustion size and platinum catalyst of Gardner within the combustion chamber of Kovacik because the microcombustor allows for lean burning at low flames and at temperatures less severe than with diffusion flames, thus enabling a longer system lifetime, reduced fuel consumption, and portable applications (Gardner column 3, paragraph 2) and the catalyst enables flame stabilization in the microsystem, permits combustion with lean fuel/air mixtures, lowers the combustion temperature and extends materials limits of flammability (Gardner column 3, paragraph 2). Because Gardner and Kovacik are both concerned with combustion systems, one would have a reasonable expectation of success from the combination.

Regarding claim 9, as Kovacik disclosed, the choice of layers within the filter depends on the specific filter performance required for a specific application. It would have been further obvious to choose a specific number of layers as within the claim and to use the specific materials of the claim as  $\text{SiO}_2$  is a known dielectric and both Si and  $\text{SiO}_2$  are within the glass disclosed by Kovacik.

Regarding claims 11 and 12, the choice of fuel and operating pressures are dependent on the specific application and would be obvious to one skilled in the art to make such choices. Further the small diameters of the claims are taught by Gardner for microcombustion systems and would be obvious to choose such diameters for the reasoning given above pertaining to microcombustion advantages.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday - Friday 7 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Fick *ADF*  
AU 1753  
June 22, 2007



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